

### REMARKS/ARGUMENTS

Reconsideration of this application and favorable action are solicited. In order to more particularly point out and distinctly claim that which the applicants regard as their invention, claim 1 has been amended. Claims 16-21 are newly added claims, which are  
5 dependent upon the once amended claim 1. No new matter is introduced. To overcome the objections to claim 1, typos in claim 1 have been corrected. Reconsideration of claim 1 is politely requested.

#### Response:

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#### 1. Rejections over claims 1-9:

Claim 1 was rejected under 35 U.S.C. 102(b), for reasons of record that can be found on pages 2-3 in the Office action identified above. Claims 7-8 have been canceled by this amendment.

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Claim 1 is rejected because of U.S. Patent No. 6,127,058 (hereinafter "Pratt"). Pratt teaches a planar fuel cell structure comprising two current collector assemblies sandwiching an MEA 23. Each of the current collector assemblies 21, 22 consists of an electrically insulating plastic frame 24 that contains a plurality of current collectors 25 embedded within the plastic frame. The current collectors 25 are insert molded into the plastic frame

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24. It is respectfully noted that the MEA 23 described in Pratt reference refers to a "single sheet of polymer electrolyte membrane" (Col. 2, lines 40-41; Fig. 2). Pratt further limits to that "no electrical connections are made through the MEA" in order to avoid some disadvantages.

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Please see col. 4, lines 11-30 and lines 49-53, Pratt states "unlike prior art stacked fuel cells, where significant area around the perimeter of every MEA is dedicated to sealing and mounting, and unlike prior art planar fuel cells, where significant area is consumed by the need to seal the electrical connections as they penetrate the PEM, only

the perimeter of the MEA is needed to effect the seal, and no electrical connections are made through the MEA. The latter feature is worth reiterating, that is, our novel scheme provides for electrical connections between and within the fuel cell without traversing the thickness of the solid electrolyte sheet. No penetrations are made in the MEA, thus the

5 solid electrolyte can be made in a single, continuous sheet, with all the anodes on one side and all the cathodes on the other side. There are no holes or apertures to seal, as in the prior art” and “the electrical interconnections are not on the interior of the fuel cell (i.e. not in the MEA) and do not traverse the thickness of the electrolyte”.

According to Pratt (col. 4, lines 54-57), a dielectric frame is essential and is

10 required in order to seal the interconnection between the various anodes and cathodes, which is not required in the instant application. According to Pratt (col. 4, lines 58-61), a series of channels 35 are required in order to distribute fuel gas on one current collector assembly. Such fuel gas distributing channels are not required in this application.

Comparing to Pratt, the applicants believe that the claimed invention is different from and

15 has advantages over the cited prior art references.

The applicants submit that Pratt fails to teach and anticipate that an intermediate bonding layer for accommodating the plurality of proton exchange membranes and the intermediate bonding layer has thereon a plurality of second conductive via through holes that are aligned with the first conductive via through holes of the integrated cathode

20 electrode sheet, and “the corresponding first conductive via through hole of the integrated cathode electrode sheet, the second conductive via through hole of the intermediate bonding layer, and the conductive pad of the integrated anode electrode sheet are soldered together”, as required in the amended claim 1 and the newly added claim 21, respectively, of this application.

25 The applicants submit that Pratt fails to teach and anticipate that “surface area of the first apertures within each of the cathode electrode areas is more than 50% of surface area of each of the cathode electrode areas” and “surface area of the second apertures within each of the anode electrode areas is more than 50% of surface area of each of the anode

electrode areas", as required in the amended claim 1 of this application.

Further, the applicants submit that Pratt fails to teach and anticipate that "an integrated cathode electrode sheet comprising a first copper clad laminate (CCL) substrate" and "an integrated anode electrode sheet comprising a second CCL substrate",  
5 and "both of the first and second CCL substrate comprise a base layer, a first copper layer laminated on an upper surface of the base layer, and a second copper layer laminated on a lower surface of the base layer", as required in the amended claim 1 and the newly added claim 16, respectively.

Further, the applicants submit that Pratt fails to teach and anticipate that "a control  
10 circuit layout integrated on the first or second CCL substrate for controlling the DMFC and an external circuit", as required in the newly added claim 19.

Furthermore, the applicants submit that Pratt fails to teach and anticipate that "both of the integrated cathode electrode sheet and the integrated anode electrode sheet are coated with a layer of solder resist", as required in the newly added claim 20.

15 The applicants believe that these distinct features distinguish the applicants' invention from the cited references and therefore claims 1 and 16-21 are allowable. Reconsideration of claim 1 is therefore politely requested. As claims 2-6, 9 and 16-21 are dependent on claim 1, they should be allowed if claim 1 is allowed. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

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2. Provisional double patenting rejection over claims 1, 2, and 4-9:

Claims 7-8 have been canceled. Since claim 1 has been amended, the applicants believe that the once amended claim 1 is now patentably distinct from that of Application No. 10/908,158. Reconsideration of the once amended claim 1 and withdrawal of the provisional  
25 double patenting rejection over claims 1, 2, 4-6 and 9 is thus respectfully requested.

Appl. No. 10/709,921  
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Reply to Office action of June 06, 2006

Sincerely yours,



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